August 26, 1999

EFED POLICY MEMORANDUM

SUBJECT: Calculation of Terrestrial EECs

FROM: Denise Keehner, Acting Director
Environmental Fate and Effects Division

TO: EFED Staff

Overview

The Terrestrial Exposure Tech Team in consultation with other tech teams has refined and proposed a screening method for determining terrestrial estimated environmental concentrations. Because current knowledge is lacking for how several variables (i.e. photolysis, hydrolysis, microbial degradation, and volatilization) impact the accuracy of eec calculations for terrestrial scenarios, the following describes EFED's interim policy. This interim policy will be in effect until such time as research and further refinements are completed and the methodology updated.

Interim Policy

For non-systemic pesticides, either of the terrestrial models proposed are acceptable for use so long as the results are consistent. With regard to model inputs:

If scientifically valid and statistically robust foliar dissipation data are available, the 90% upper confidence limit of the mean half-life will be used.

In the absence of foliar dissipation data, the shortest half-life among hydrolysis, photolysis, or volatilization should be multiplied by three.

When no half-life data is available, the 30 day default half-life will be acceptable for the interim, but will receive further discussion, research, and development.

Background

The assessment of risk to terrestrial organisms requires that concentrations of pesticides on food items be determined. While initial concentrations on surfaces can be estimated by using the Kenaga nomogram (Hoerger and Kenaga, 1972; modified by Fletcher, et al. 1994), to more accurately estimate residues dissipation kinetics must be considered. EFED has developed three models to estimate surface residues taking into account dissipation from food items. The Terrestrial Exposure Tech Team has proposed use of several models, FATE, FATE5, TERREEC (FORTRAN batch programs), and ELL-FATE (Quattro spreadsheet). All four programs use the same input parameters (e.g. use rate, half-life, frequency of application, interval, number of

applications) and provide the same concentration results. The only apparent difference among the models presently is how they are displayed.

The Tech Team forwarded recommendations on the imputs to these models to assure consistency across EFED . They also recommended a 30 `day default half-life in the absence of data.The current consensus on use of the 30 day half-life is based on information reported by Willis and McDowell (1987) which reported 28 days to be the longest half-life noted. This policy pertains to non-systemic pesticides only. The TETT will work toward a better model and will in the near future consider probabilistic approaches to acute and chronic terrestrial eecs.